Bioc 310 Syllabus and Course Policy

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Office Hours: Students should contact the instructor to set up individual regular meeting times.

Course objectives and expected learning outcomes

- To conduct independent, mentored laboratory research in areas that may include molecular genetics, cell biology, bioinformatics, biochemistry, and plant physiology
- To increase knowledge of and experience with current research methodologies and their limitations
- To gain scientific communication experience through written and oral reports

Requirements for Bioc 310 course credit

Bioc 310 is an independent program of study for students interested in biological or biomedical research. All students will complete a laboratory-based independent research project under the supervision of a faculty member. There is no formal classroom instruction.

Summary: Bioc 310 students must perform research in the Braam laboratory in the BioSiences Department at Rice University. Students are required to spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, Bioc 310 counts as one required lab course but not as 300-level elective in Natural Sciences or Engineering. Bioc 310 requires a research proposal, weekly reports and a final project (a research paper in the fall semester or either a poster presentation or research paper in the spring semester). The prerequisite is either Bioc 111 or Bioc 211 and instructor permission is required. To receive credit, a student must participate in a laboratory-based biosciences research project. It is strongly recommended that all students register for 3 credit hours their first semester of Bioc 310. Fewer hours will leave insufficient time for meaningful research and more might be unsustainable with a busy academic schedule.

Registration: Students must obtain a special registration form (http://registrar.rice.edu/student/special_registration/), obtain the instructor's signature, and register for section 7 of Bioc 310. All Bioc 310 students should register before the beginning of the semester. Students who begin their research late will be required to make up missed research hours over the course of the semester.

Required writing assignments

Research proposal: Prepare a 1-page research project proposal (abstract) that summarizes the basis of the planned project and details your experimental aims for the semester. Develop this proposal in consultation with the instructor and the lab mentor and submit it to both the instructor and the lab mentor before the end of the second week of classes.

Weekly progress reports: Send weekly email progress reports to the instructor and your lab research mentor. This weekly email will include: hours in lab that week, experiments conducted, results obtained, conclusions drawn, and plans for the following week. These reports will be due by the end of each week (Saturday, 11:59 pm). Please consult the weekly report section of the Bioc 310 manual and your lab mentor for the suggested format and examples.

Final project: A research paper will be required in the fall semester and a poster or a research paper will be required in the spring semester. Submit drafts of papers or posters to your mentor and the instructor for

comments prior to the final deadline. See the deadlines below for the relevant deadlines. The research paper is due at 5 pm on the last day of finals; the poster will be presented at the Rice Undergraduate Research Symposium (RURS) in the spring (http://rurs.rice.edu/). It is the student's responsibility to register for the poster session.

Schedule and Deadlines

All written materials (student agreement form, proposal abstract, weekly reports, paper/poster drafts and final paper/poster) must be submitted to the instructor and copied to your lab mentor.

Fall Semester

- **Prior semester or summer** –submit Bioc 310 application at least two-weeks prior to the start of classes; all students must complete and submit Student Agreement Form to the instructor*.
- **By the end of each week (Saturday, 11:59 pm)** email weekly report to your instructor and your lab mentor.
- **Before the end of the second week** – email proposal abstract to your instructor and your lab mentor.
- **Date TBA** (Time and location TBA) – informational meeting with the Bioc 310 instructor or writing consultant.
- **Last week in October** – email outline to your instructor and your lab mentor and request feedback.
- **Last week of classes** – draft of research paper due to your instructor and your lab mentor for feedback.
- **Last day of finals, 5 pm** – final research paper and time sheet due to your instructor and your lab mentor.

Spring Semester

- **Prior semester** – begin planning for spring semester (and summer research); submit Bioc 310 application at least two-weeks prior to the start of classes; all students must complete and submit Student Agreement Form to your instructor and your lab mentor.
- **By the end of each week (Saturday, 11:59 pm)** – email weekly report to your instructor and your lab mentor.
- **Before the end of the second week** – email proposal abstract to your instructor and your lab mentor.
- **Date TBA** (Time and location TBA) – informational meeting with the Bioc 310 instructor or writing consultant.
- **Late February** – submit poster abstract with title and author list to your instructor and your lab mentor for review, if the instructor recommends a poster instead of a research paper.
- **Early-mid March** – submit poster abstract and registration to RURS (check RURS website).
- **Mid-late March** – submit poster draft to your instructor and your lab mentor for feedback.
- **First week of April or earlier** – print completed poster and present at RURS poster session.
- **Last day of finals, 5 pm** – submit final poster (electronically and printed as a single 8.5x11 inch page) or final research paper and time sheet due to your instructor and your lab mentor.

Student agreement

Over the course of the semester, we expect that Bioc 310 students will:

1. spend *at least* 3 hours in lab per week per credit hour of Bioc 310
2. be intellectually engaged in their research
3. be familiar with the relevant research (read articles, confer with researchers)
4. understand the larger context of their work
5. perform experiments carefully and with an attention to detail
6. keep a detailed notebook
7. be responsible with lab reagents and equipment
8. keep a regular lab schedule and inform their professor and bench mentor prior to an absence
9. be on time for meetings and experiments

10. work well with and be respectful of their bench mentor and other lab colleagues
11. complete clear and detailed weekly reports by Saturday night of each week
12. complete a thoughtful proposal abstract by the end of the second week of classes
13. present their research and research findings clearly and effectively in a final research paper or poster presentation
14. properly cite all contributions by others (published and unpublished) in all of their written work for this course, in accordance with course policies regarding plagiarism
15. share drafts with their research professor and mentor, giving them an opportunity to suggest edits and approve documents, prior to submission of any final copy of papers or posters
16. ask for clarification from their professor, mentor, and course instructor if they are unsure of any of their lab protocols or course expectations

In addition to the syllabus and course policy, all students are responsible for familiarity with the content of the Bioc 310 manual (www.bioc.rice.edu/bioc310/).

Honor code for Bioc 310

Guidelines for collaboration with colleagues: As research is a collaborative effort, you are expected to communicate with and receive input from others. While the work reported in your written materials should be your own, you may include data and figures produced by other members of your lab as background if they are relevant to your conclusions about your own research and are properly attributed to the individual(s) who produced them. Although many of the projects in a lab originate from a common starting point, your abstract, summary, and introduction should be in your own words and not simply copied (plagiarized) from existing lab documents.

Guidelines for proper citation of written work: Plagiarism is a form of academic fraud and is a violation of the Rice Honor Code. Forms of plagiarism include: copying a source word-for-word, inadequate paraphrasing without proper acknowledgement, and claiming another's ideas as one's own. Bioc 310 students are required to educate themselves in the use of proper citations in all of their written work by reading the following three sources:

- the Rice Honor Code information on Academic Fraud and Acknowledgement of Sources: http://honor.rice.edu/honor-system-handbook/
- the document, "Recognizing and Avoiding Plagiarism" by Dr. Janice L. Hewitt, which is posted in the resources folder on the Bioc 310 Owl-Space site
- the Bioc 310 manual sections, "When should I reference something?" and "How do I reference material from a review article?" written by Dr. Richard Gomer

Disability support

Guidelines for students with disabilities: If you have a documented disability that will impact your work in this class, please inform your research professor to discuss your needs (off-campus students should inform their section instructor as well). Additionally, you will need to register with the Disability Support Services Office in the Allen Center. For more information visit the Rice Disability Support Services site (www.dss.rice.edu).